

# APPARATUS AND METHOD FOR PROVIDING COMMUNICATION SERVICE BASED ON PERSONAL IDENTIFIER IN INTERNET NETWORK

## 5 BACKGROUND OF THE INVENTION

### 1. Field of the Invention

The present invention relates to an apparatus and method for providing a communication service based on a personal identifier in an internet network, and in particular to an improved apparatus and method for providing a communication  
10 service based on a personal identifier in an internet network which makes it possible a user to communicate with another user in the internet based on a uniform and unique personal identifier information at a certain terminal(for example, a personal computer) connected with the internet.

### 15 2. Description of the Background Art

In the internet, a communication method is generally implemented using a terminal identifier of a certain terminal connected with an internet network. At this time, a certain packet is transferred from a transmission terminal to an internet protocol address of a receiving terminal, which packet is transferred based on a  
20 router connected with an internet network.

An identifier which identifies a certain terminal except for the internet protocol address in the internet is a domain name. The domain name of a terminal(transmission terminal, receiving terminal) is managed by a DNS(Domain Name System) and is converted into an internet protocol address of a terminal  
25 thereby.

Therefore, the domain name of a receiving terminal transferred from a transmission terminal is converted into an internet protocol address by the DNS, so that a packet is transferred to a corresponding internet protocol address of the receiving terminal.

5 In the above-described communication method, a domain name must be allocated to the terminal connected with the internet network, and a certain interrelationship between the domain name and the internet address must be registered in the DNS for thereby implementing an internet communication.

10 In the above-described communication method using a terminal identifier in the internet, in the case of a terminal which uses a dynamic internet protocol address, the terminal does not have a unique terminal identifier such as a domain name and an internet protocol address.

Therefore, it is impossible to obtain a communication based on a unique terminal identifier. In addition, a continuous communication is not implemented  
15 based on a uniform identifier based on the movement of a user.

In the case of a terminal which has a fixed internet protocol address, since an information concerning an interrelationship between a terminal and a user of the terminal does not exist in the internet, an interrelationship with the terminal is disconnected based on the movement of a user. Therefore, it is impossible to  
20 implement a communication between the users based on a unique identifier.

Since an internet user does not use only one terminal for a long period, a real time communication between the users is not obtained at a certain time.

An internet user may have a plurality of presence points in the internet, for example, more than one e-mail address or more than one web page for a real time  
25 multimedia communication and an e-mail communication with a certain terminal in

the internet. In this case, the internet user uses another type identifier, so that it is impossible to implement a communication with a certain user based on a unique personal identifier.

## 5 SUMMARY OF THE INVENTION

Accordingly, it is an object of the present invention to provide an apparatus and method for providing a communication service based on a personal identifier in an internet network which are capable of implementing a communication between users even when the users are located at any place in the internet.

10 To achieve the above objects, there is provided an apparatus for providing a communication service based on a personal identifier in an internet network in the apparatus providing a communication between users using a terminal connected with an internet network based on a connection with an internet service provider network by receiving a static internet protocol address or a dynamic internet  
15 protocol address, which includes a user information management means connected with the internet network for providing a unique personal identifier to a user and providing a communication service based on the personal identifier information, wherein said user information management unit includes a user information service unit for verifying a user information based on the personal identifier information  
20 and providing a service that a user wants, to a user's terminal through the internet network, and a user information storing unit connected with the user information service unit for storing the personal identifier and user information.

To achieve the above objects, there is provided a method for providing a communication service based on a personal identifier in an internet network in an  
25 apparatus providing a communication between users using a terminal connected

with an internet network based on a connection with an internet service provider network by receiving a static internet protocol address or a dynamic internet protocol address, which includes a user information service providing step in which an internet network is connected for providing a unique personal identifier to a user and providing a communication service based on the personal identifier information, wherein said user information service providing step includes, a first step for receiving a personal identifier information, a verification information and a user information service request message from a user which are needed for a user verification, a second step for verifying a user based on the personal identifier and verification information, a third step for performing a user information service based on the type of each user information service request message, and a fourth step for transferring a result message obtained based on an execution of the user information service to the user in accordance with the type of the user information service request message.

## **BRIEF DESCRIPTION OF THE DRAWINGS**

The present invention will become better understood with reference to the accompanying drawings which are given only by way of illustration and thus are not limitative of the present invention, wherein;

Figure 1 is a schematic block diagram illustrating an apparatus for providing a communication service based on a personal identifier in an internet network according to an embodiment of the present invention;

Figure 2 is a view illustrating an operation based on a user information management unit of Figure 1;

Figure 3 is a view illustrating the construction of a user information

internet protocol packet for a user information registration of Figure 2;

Figure 4 is a flow chart of an operation procedure based on a user information management request of Figure 2;

Figure 5 is a flow chart of an operation procedure based on a user information inquiry request of Figure 2;

Figure 6 is a flow chart of an operation procedure based on a user information deletion request of Figure 2;

Figure 7 is a flow chart of an operation procedure based on a user information management request of Figure 2; and

Figure 8 is a flow chart of a user information transmission procedure of Figure 4.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The embodiments of the present invention will be explained with reference to the accompanying drawings.

Figure 1 is a view illustrating the construction of a communication environment and network for a communication based on a personal identifier according to the present invention which includes internet service provider networks 102 and 103, terminals 104a through 104f, a user information management unit 120 and more than one internet application servers 130a and 130b.

As shown in Figure 1, the internet service provider networks(ISP networks) 102 and 103 are connected with an internet network 100 for providing an internet connection service, a web site establishment and a web hosting service to a personal or a company.

The terminals(for example, a personal computer, a web server, etc.) 104a

through 104f each include an internet protocol and internet application function and are connected with the internet network 100 based on a static internet protocol address or a dynamic internet protocol address allocated by the internet service provider.

5           The user information management unit 120 is connected with the internet network 100 and provides and manages a personal identifier and a user's terminal information and an internet application host information.

          The internet application servers 130a and 130b execute an internet application program in the internet 100 and has a user account by the service of an  
10       application such as a personal web service or an e-mail service.

          A personal identifier of an internet user is unique in the internet and may have a certain type. In the present invention, a user's name formed in an existing URL(Uniform Resource Locator) type is connected with a domain name of a server which provides a certain user information management service for thereby  
15       obtaining a domain name of a certain internet host.

          The user information management unit 120 includes a user information storing apparatus 122 and a user information management server 124.

          The user information storing apparatus 122 stores a user information in an object-oriented database type, a relational database type or a directory server type.

20           The user information management server 124 is connected with the internet network 100 for thereby managing a user information and obtaining a security and verification with respect to a user information of the user information storing apparatus 122.

          The user information management unit 120 manages and provides a upon  
25       request for the user's information that the user wants to receive.

At this time, the user information management unit 120 manages the terminals 104a through 104f used by the user for an internet application based on a personal identifier and the names of the internet application servers 130a and 130b which support the internal applications.

5 A user information management protocol is performed between the user and the user information management unit 120 for the above-described user information management. The user information management protocol will be explained with reference to Figures 3 through 6.

10 The user management server 124 and the internet application servers 130a and 130b have a static internet protocol address and a domain name and are connected with the internet for thereby implementing a communication based on an internet protocol address. At this time, the terminals 104a through 104f and the names of the internet application servers 130a and 130b are managed in an internet protocol address or domain name type and the above management is stored in the  
15 user information management storing apparatus 122.

Figure 2 is a view illustrating an operation by a user information management unit of Figure 1. Namely, Figure 2 illustrates operational relationships (a) through (d) between the internet users(user A and user B) 205 and 206 and the user information management unit 120 using a personal identifier in the internet  
20 network.

The users(user A and user B) 205 and 206 of Figure 2 are internet users each having a personal identifier. The terminals(terminal A and terminal B) 201 and 202 of the above users are turned on and have a dynamic internet address or a static internet address.

25 The users(user A and user B) 205 and 206 transfer a user information

service request message, which requests a user information service, to the user information management unit 120 through the terminals (terminal A and terminal B) 201 and 202.

The user information service request is classified into a user information management request "a" for a user information management itself, a user information inquiry request "b" for inquiring a current user information of another user to whom the current user wants to access, and a user information deletion request "d" in which the current user deletes a user information himself registered in the user information storing apparatus 122 based on the user information management request.

In figure 2, (a) illustrates a user information management request by which the user A 205 registers a user information into the user information management unit 120 through the terminal A 201;

(b) illustrates a user information inquiry request by which the user A 205 registers a user information of the user B 206 into the user information management unit 120;

(c) illustrates a communication between the terminal A 201 and the terminal B 202 or the terminal A201 and the internet application server 130 which use a user information verified by the user information management unit 120; and

(d) illustrates a user information deletion request by which a personal identifier of the user A 205 and information of the terminal A 201 or the internal application server 130c corresponding to the user information are deleted from the user management information system 120.

Figure 3 illustrates the construction of a user information internet protocol packet 400 for a user information registration of Figure 2 in which in the case that a



user transfers a user information, the user stores a user information into the user information internet protocol packet 400 of a packet data unit(PDU) and transfers the same.

As shown in Figure 3, there are provided a dialing side internet protocol address 401, an incoming side internet protocol address 402, a personal identifier 403, a private/public network flag 404, a terminal internet address 405, internet application types 406a and 407a and node identifier information 406b and 407b.

The dialing side internet protocol address 401 of Figure 3 represents an internet protocol address of the terminal that the current user is connected.

The incoming side internet protocol address 402 represents an internet protocol address of the incoming side terminal which receives a packet, namely, an internet protocol address of the user information management server 124.

The dialing side internet protocol address 401 and the incoming side internet protocol address 402 exist in an internet protocol program header and are set by a terminal or a proxy terminal. The user does not set the same.

The personal identifier 403 represents a personal identifier of a user who wants to register a user information based on the personal identifier allocated to each user.

In addition, the private/public network flag 404 represents whether the terminal that a user uses to register a personal information, is connected with a private internet protocol network or a public internet protocol network.

In the case that the user terminal is connected with the public internet network, the internet protocol address 405 of the terminal represents a public internet protocol address of the terminal. In addition, in the case that the user terminal is connected with the private internet protocol network, it represents a

public internet protocol address allocated to a gateway which connects the private network and the public internet network.

For example, in the case that the user terminal 104a through 104f, 201 and 202 are connected with the private internet protocol network, the private/public flag value is 1, and the internet protocol address 405 of the terminal is a public internet protocol address allocated from the gateway between the private network and the public network.

In addition, the internet application types 406a and 407a represent the types of the internet application performed by the user. If the user operates the web server, the types 406a and 407a of the internet application represent a web service.

The node identifier information 406b and 407b represent the uniform resource locator(URL) of a corresponding web page in the case that the types 406a and 407a of the internet application are a web service.

The internet application types 406a and 407a and the node identifier information 406b and 407b are selective and are transferred to one of the blocks 406 and 407. In the case that the currently operated internet application types are more than one, the internet application types 406a and 407a and the node identifier information 406b and 407b are transferred to a plurality of blocks, respectively.

The internet protocol address 405 of the terminal has a known internet protocol address format, and the internet application types 406a and 407a and the node identifier information are basically formed in an ASCII format.

The user information management unit 120 stores an information(user information) of the user information internet protocol packet 400 which is received using a personal identifier as a key into the user information storing apparatus 122.

Figure 4 is a flow chart illustrating an operation procedure based on a user

information management request (a) of Figure 2, namely, a procedure in which the user information management unit 120 receives a user information of the current user A 205 and register a user information by connecting with the internet.

If another user wants to communicate with the user A 205, the user information of the user A 205 is received from the user information management unit 120.

The user information management unit 120 receives a user information processing request message, a personal identifier and a verification information(for example, password) needed for a user verification from the user A 205 through the terminal A 201(S2).

A verification with respect to the user A 205 is performed with respect to the user information management request message, the personal identifier and the verification information of the user A 205(S4).

It is judged whether the user A 205 exists in the user information storing apparatus 122 based on the user verification(S6). If the user A 205 does not exist therein, a subscriber error report is outputted(S12).

As a result of the judgement, if the user A 205 exists therein, the user information management request of the user A 205 is performed for thereby permitting a user information registration of the user A, and an information of the user's current terminal and a user information including an internet application type and the name of an application node are received(S8).

The user information received from the user A 205 is stored in the service storing apparatus 122, and a result of the storing is transferred to the terminal A 201(S10).

Figure 5 is a flow chart illustrating an operation procedure based on a user

information inquiry request (b) of Figure 2. Namely, the user A205 inquires a user information of the user B206 to the user information management unit 120.

The user A 205 is connected with the user information management server 124 through the terminal A 201 and transfers a user information inquiry request message, a personal identifier and a verification information(for example, password, etc.) needed for a user verification of the user information management server 124(S20).

The user information management server 124 which received the user information inquiry request message, the personal identifier and the verification information of the user A 205 performs a verification with respect to the user A 205(S22) and judges whether the user A 205 exists in the user information storing apparatus 122(S24).

As a result of the judgement, if the user A 205 does not exist therein, a subscriber error report is outputted(S32), and if the user A 205 exists therein, the user information inquiry request of the user A 205 is received(S26).

The user A 205 transfers the personal identifier of the user B 206 and the type of the internet application to the user information management unit 120(S28), and the user information management server 120 searches a user information of the current user B 206 corresponding to the personal identifier through the user information storing apparatus 122 and transfers the user information of the user B 206 that the user A 205 wants to the terminal A 201(S30).

The user A 205 accesses the currently used terminal B 202 of the user B 206 and the internet application server 130c of the user B 206 using the user information of the user B 205 and communicates with the user B 206 in real time.

Figure 6 is a flow chart illustrating an operation procedure based on a user

information deletion request (d) of Figure 2. Namely, Figure 6 illustrates a procedure for deleting an information of the terminal A 201 or the internet application server 130c corresponding to the personal identifier and user information registered through the procedure of Figure 4 from the user information management unit 120.

The user A 205 is connected with the user information management server 124 through the terminal A 201 and transfers a user information deletion request message, a personal identifier and a verification information(for example, password, etc.) needed for a user verification of the user information management server 124(S40).

The user information management server 124 which received the user information deletion request message, the personal identifier and the verification information of the user A 205 performs a verification with respect to the user A 205(S42), and it is judged whether the user A 205 exists in the user information storing apparatus 122(S44).

As a result of the judgement, if the user A 205 does not exist therein, a subscriber error report is outputted(S52), and if the user A 205 exists therein, the user information deletion request of the user A 205 is permitted(S46).

The user A 205 transfers the personal identifier information, the type of the internet application and the node identifier information to the user information management server 124(S48), and the user information management server 124 searches a user information corresponding to the personal identifier information through the user information storing apparatus 122 and deletes the searched information, and a result of the deletion is transferred to the terminal A 201(S50).

Figure 7 is a flow chart illustrating an operation procedure of a user

information management request of Figure 2. Namely, Figure 7 illustrates a procedure that a user information is registered through a registration web server(not shown) which executes a user applet for a user verification and user information registration.

5           The registration web server is connected with the user terminals 104a through 104f, 201 and 202 and receives a personal identifier of a user and a verification information(for example, password, etc.) needed for a user verification from the user terminals 104a through 104f, 201 and 202(S60).

10           A user verification is performed based on the received personal identifier and verification information, and it is judged whether the user is a previously registered user(S62). If the user is not the previously registered user, a subscriber error report is outputted(S72).

15           As a result of the judgement, if the user is a previously registered user, the user applet is transferred to the user terminals 104a through 104f, 201 and 202(S64), and the user applet is executed(S66).

          The personal identifier information and the current user information are received from the user terminals 104a through 104f, 201 and 202 based on the user applet in the format of Figure 3(S68).

20           The received user information is transferred to the user information management unit(120)(S70).

          Figure 8 is a flow chart illustrating another example of the user information transfer procedure(S8) of Figure 4. Namely, Figure 8 illustrates a procedure that a personal information software which is an exclusive software for a user information registration is executed by the user terminals 104a through 104f, 201 and 202 for  
25   thereby registering the user information.

First, the personal information software of the user terminals 104a through 104f, 201 and 202 are executed(S80).

The personal identifier information and the current user information are received from the user terminals 104a through 104f, 201 and 202 by the personal  
5 information software in the format of Figure 3(S82).

Another user is connected with the internet application service which is operated by the current user using a personal identifier information of the user through each user information registration procedures of Figures 4, 7 and 8.

The user information management unit 120 is connected with the internet  
10 application service through the node identifier information 406b and 407b when the user requests an inter-working with the internet application service of a certain user when the user information inquiry is requested (b).

Namely, the user information management unit 120 sets a mapping interrelation information of the types 406a and 407a of the internet application and  
15 the node identifier information 406b and 407b with respect to the personal identifier of the user.

The user information management unit 120 inter-works with the internet application of the user using the node identifier information through the above mapping interrelation information when the inter-work with the internet application  
20 of the user is requested when a user information inquiry of the user is requested by other user.

For example, in the case that "john.person.net" is registered in the user information management unit 120 as a personal identifier information of the user B 206, and "www.hanmir.com/~john" which is his home page URL is registered as  
25 the node identifier information 406b and 407b, when the user A 205 is connected

through "john.person.net" which is the personal identifier information of the user B 206, the current URL is reset to "www.hanmir.com/~john" for thereby connecting with the homepage of the user B 206.

In another embodiment of the present invention, the user information  
5 management unit 120 connects a user with another user using a user's mobile phone using a personal identifier even when the user does not exist in the internet.

Namely, when the user information inquiry (b) is requested, in the case that a communication session connection with a mobile communication terminal of another user which is an inquiry object of the user is requested, the user  
10 information management unit 120 sets a communication session and connects the user and the mobile communication terminal.

At this time, the types 406a and 407a of the internet application of the user is a mobile phone, and the node identifier information 406b and 407b are the identifiers(for example, phone number, terminal inherent number, etc.) of the  
15 mobile phone.

Therefore, in the case that another user requests a connection with the user through the personal identifier information of the user, the user management information 120 recognizes an identifier information of the mobile phone through the node identifier information 406b and 407b.

20 The identifier information of the mobile phone is connected with the communication system, and a communication session to the mobile phone of the user is set based on an inter-working with the mobile communication network through the gateway in the internet.

The user information management server 124 according to the present  
25 invention transfers the internet protocol address through the user identifier. In the



case of the existing DNS server, the user information management server 124 transfers the internet protocol address through the host name. If the user identifier is formed in the same format as the host name, the user management server 124 is capable of performing a function of the DNS server.

5           Therefore, the users managed by the user information management unit 120 perform a communication with other users using the personal identifier by a simple DNS operation of the user information management server 124.

As described above, an internet communication is implemented based on a personal identifier information in an internet network, and an internet access is  
10           implemented based on only a personal identifier irrespective of a location of an internet user and a terminal type of the user.

In addition, it is possible to designate an information concerning a URL of various home pages, an e-mail account, etc. used by the user and a user's terminal using a personal identifier, so that a mobility of a user is supported, and a real time  
15           communication between the users is obtained. In addition, it is possible to use various internet application services(home page, e-mail, etc.) that the user has in the internet using a personal identifier information.

In addition, it is possible to communicate with a certain user through an inter-working with a communication system using a personal identifier information  
20           even when a user does not exist in the internet.

As the present invention may be embodied in several forms without departing from the spirit or essential characteristics thereof, it should also be understood that the above-described embodiments are not limited by any of the details of the foregoing description, unless otherwise specified, but rather should  
25           be construed broadly within its spirit and scope as defined in the appended

claims, and therefore all changes and modifications that fall within the meets and bounds of the claims, or equivalences of such meets and bounds are therefore intended to be embraced by the appended claims.

11. The method of claim 10, wherein the first set of data is a first set of data and the second set of data is a second set of data.